CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

ORDER NO. 94-010

RESCINDING WASTE DISCHARGE REQUIREMENTS, ORDER NO. 85-131

FOR

ANACOMP, INC.
(FORMERLY XIDEX CORPORATION)
5200 AND 5440 PATRICK HENRY DRIVE
SANTA CLARA
SANTA CLARA COUNTY

The California Regional Water Quality Control Board, San Francisco Bay Region, (hereinafter called the Board) finds that:

1. **Site Location and Description** The site is located at the northwestern edge of the City of Santa Clara, Santa Clara County, next to Calabazas Creek and south of Highway 237. The site is comprised of two buildings - 5200 and 5440 Patrick Henry Drive, and it is situated at the industrial area of Santa Clara.

2. **History and Regulatory Status** Dysan Corporation occupied and operated at the facilities manufacturing computer hard disks and floppy disks from 1979 to 1985. Xidex Corporation acquired Dysan in 1985. Anacomp, Inc. acquired Xidex in 1988 and continued producing the same products until 1991. Hereafter, Anacomp and its predecessors are referred to as the discharger. In 1992, Abbott Laboratories purchased building 5440. The discharger leased building 5200 but has never owned it. William Batton owns this parcel. However, the discharger still remains liable for cleanup of the site.

3. In 1979, the discharger installed three tank farms that consists of six 7,300 gallon underground storage tanks for storing organic solvents such as methyl ethyl ketone, cyclohexanone, and diglyme (diethylene glycol dimethyl ether) and four 10,000 gallon underground storage tanks for storing total petroleum hydrocarbon as diesel (TPH-diesel). The tank farms were located west of the 5200 and 5440 facilities and east of the Calabazas Creek levee (see Figures 1 & 2).

4. Subsurface investigation was initiated at the site in July 1982. High levels of various industrial solvents such as methyl ethyl ketone (MEK), and its break-down product acetone, and isopropyl alcohol (IPA) and cyclohexanone, were detected in soil and shallow groundwater in the vicinity of the three underground tank farms adjacent to the 5200 and 5440 facilities. The pollution source was most probably due to chemical spillage, overflows, leakage, and/or inadequate chemical handling practices.

5. The Board adopted waste discharge requirements (Order No. 85-131) for the site on November 20, 1985. In this Order, the Board named Xidex as a discharger as the property owner and for its chemical usage and release during its operation at the site. The Order required the discharger to conduct remedial investigation, to implement interim remedial measures, and to perform groundwater monitoring at the site.

6. Hydrogeology The site is located at the southern edge of the tidal and marine deposits of the bayland southern portions of the San Francisco Bay. Subsurface investigation at the site indicated that the soils encountered to a depth of 40 feet generally consist of unconsolidated alluvial and interfluvial deposits of silty clays, clays, and some sand and gravel lenses.

7. Groundwater Quality Groundwater beneath the tank farms is encountered five to seven feet below the ground surface. No total dissolved solids (TDS) data are available for shallow groundwater at the site, but the discharger has conducted conductivity tests on a quarterly basis. The average conductivity is about 3,420 micro-mhos/cm. Generally, high conductivity infers high TDS. Water quality investigations at an adjacent site and an upgradient site computed a conductivity to TDS ratio of 1.1 : 1 and 1.6 : 1, respectively. Using these ratios, the average TDS value at the Anacomp site is between 2,138 and 3,110 mg/l. The TDS threshold for a potential drinking water is 3,000 mg/l or less.

8. There are no known shallow groundwater wells used for municipal or private water supply within a one mile radius of the site. All municipal and private wells in the surrounding area supply water from the deeper aquifers.

9. Based on the following factors, shallow groundwater beneath the site is unlikely to be a future source of drinking water:

   a. Groundwater TDS concentrations clearly exceed 1,000 mg/l, the limiting concentration established for municipal supply waters (Title 22 of CCR).

   b. Groundwater TDS concentrations are close to and at times exceed the 3,000 mg/l level, above which groundwater is not considered even a potential source of drinking water (Regional Board Resolution No. 88-39 and October 21, 1992 Basin Plan Amendments).

   c. The site is adjacent to a tidally influenced stream and shallow groundwater will continue to be affected by saline surface waters.

   d. The site and its environs are zoned for commercial and light industrial use, and this use is unlikely to change in the future. Conversion to residential use is even less likely.

10. Soil Investigation and Remediation Soil investigation at the site was initiated in March 1983 during installation of two monitoring wells near the pollution source areas. MEK concentration measured 200 ppm at 10 feet and 50 ppm at 15 feet. No contaminant was detected below 20 feet at that time.

11. To delineate the extent of the pollution in soil, the discharger conducted additional soil investigation in 1984 and 1985 where about 35 additional soil borings were collected and analyzed for presence of solvents and TPH-diesel. The 1985 soil samples measured approximately 720 ppm and 580 ppm of total solvents, predominantly MEK, at depths 10 to 20 feet below ground surface at the 5200 and 5440 facilities, respectively. Additional soil samples

were collected in 1991 at the 5440 facility and analyzed for solvents. The 1991 samples measured a maximum concentration of about 736 ppm of total solvents, predominantly MEK, at a depth of approximately 10 feet.

12. All underground tanks were flushed and removed in September and October 1988. The contaminated tanks were transported and disposed of as hazardous wastes after proper treatment. All excavations were backfilled with a mixture of excavated and new fill. The decision to backfill with excavated fill was based on considerations of concentration of chemicals present in backfilled materials and the proximity of groundwater monitoring and extraction wells.

    During the tank removal operation, 37 soil samples were also collected from backfill, sidewalls, and at the base of the excavated pit. All samples were analyzed for solvents and TPH-diesel using the appropriate EPA methods. Analytical results revealed 11 ppm of total solvents at the vicinity of building 5440 and 200 ppm of TPH-diesel in sidewall soils of the excavated tip, at the vicinity of building 5200, but no soil remediation was performed at the site.

13. <u>Groundwater Investigation and Remediation</u> Groundwater investigation was initiated at the site in 1982. Analytical results confirmed the presence of solvents at concentrations of up to 51,340 ppm in the immediate vicinity of the 5440 tank farms and up to 24,300 ppm in the vicinity of the 5200 tank farms. TPH-diesel was also detected about 1 ppm at 5440 facility. No TPH-diesel was measured in groundwater at the 5200 facility. Based on the groundwater chemical data, two separate pollutant plumes localized around the tank farms were observed. In both facilities, the vertical extent of the plumes was about 20 feet deep, and the lateral extent was limited to less than 150 feet in length.

14. In 1985 and 1986, the discharger installed a groundwater extraction and treatment system at the site. The system consisted of three extraction wells and an air stripper. This treatment system was aimed to control offsite migration and remove contaminants, primarily MEK, present in groundwater.

15. The groundwater remediation system operated at the site from March 1986 to September 1988. During this period, approximately 4 million gallons of groundwater was treated. The combined pumping rate of the three extraction wells was about 19 gpm. Pumping terminated from Fall 1988 to July 1989 due to a discharge permitting problem from the Bay Area Air Quality Management District. Concurrently, the discharger also lost the ability to discharge treated waste water to the Santa Clara sanitary sewer system.

16. In July 1989, the discharger obtained an Air District permit and decided to reuse the treated waste water in its manufacturing process. Remediation resumed and continued until February 1991. In February 1991, the company ceased manufacturing activities. This cessation forced the discharger to stop groundwater remediation as well.

17. <u>Evaluation of the Interim Remedial Measures:</u> The groundwater extraction treatment system significantly reduced MEK concentrations. The treatment system removed approximately 2,643

pounds of MEK, and natural biodegradation also removed about 857 pounds of MEK. As a result, a trend of steady reduction of contaminants concentration in groundwater was observed in the first three years after the interim remedial measure was implemented.

18. Groundwater monitoring wells has been monitored quarterly at the site since 1982. Chemical data from monitoring wells immediately adjacent to the 5200 tank farms have sharply declined from August 1982 to June 1987. Since July 1987, groundwater from the 5200 facility chemical analyses have demonstrated that solvents and/or TPH-diesel concentrations detected below detection limits. The discharger stopped analyzing for extractable petroleum hydrocarbons and diglyme at the 5200 facility in 1992 since these chemicals were not detected over successive quarters. At the 5440 facility, analytical data also revealed dramatic decline in contaminants level as well.

19. Summary of Risk Assessment To develop final cleanup goals for the site which would be protective, a baseline public health evaluation (BPHE) and risk assessment was performed by the discharger, comparable to the method used for sites regulated under Superfund (CERCLA). The steps the discharger used in the BPHE involved identifying the chemicals of concern and their toxicity, and identifying potential exposure pathways for both current-use and hypothetical-future use scenarios. In doing so, risks associated with each chemical residual in groundwater were qualitatively calculated for potential human carcinogens. For non-carcinogens, a hazard index was calculated.

Toxicity Classification for Chemicals of Concern Seven compounds have been identified in groundwater. These compounds are: MEK, acetone, IPA, cyclohexanone, diglyme, Freon 113, and TPH-diesel. Of these seven compounds, TPH-diesel is the only chemical found exceeding the detection limits. The detection limits for TPH-diesel are 10 ppm in soil and 0.050 ppm in groundwater.

The discharger has not detected benzene in shallow groundwater samples, but the discharge assumed that TPH-diesel contains 0.1% benzene as an indicator chemical. Under this very conservative approach, TPH-diesel was the only contaminant classified as a carcinogenic. None of the other six compounds of interest is classified as a carcinogenic with adequate human evidence or animal experiments. Except for Freon 113, the other six chemicals do not have state or EPA drinking water standards.

Exposure Assessment No current-use scenario was evaluated because exposure was not considered likely at this time for two reasons. First, the shallow groundwater is not currently used for drinking water. Second, the deeper aquifer has not been impacted of contaminants.

Similarly, the shallow groundwater is not considered to be a likely future drinking water source. Thus groundwater ingestion is not considered as a potential exposure route. For the future-use scenario involving the exposure of construction workers to contaminated soil and/or water, via dermal contact, inhalation, and or ingestion routes, the presence of the chemicals of potential concern is not likely to pose a threat to human health at either buildings. The hazard indices for

both the high end case and the average case scenarios at both locations were also calculated to be less than 1.0 and the excess cancer risks were less than 10^{-6} acceptable excess risk levels endorsed by EPA and the Regional Board.

Risk Characterization The estimated exposure point concentrations were then used to estimate the potential chemical intake from the hypothetical drinking water well, and for that, public health risks determined. For the non-carcinogenic chemicals, a hazard index was found to be less than 0.01.

Using the same exposure scenarios, the hypothetical cancer risk for benzene was evaluated as an indicator of TPH-diesel contamination. Excess cancer risks were calculated to be less than 2 x 10^{-9} at 5200 facility and less than 2 x 10^{-10} at 5440 facility. These values are several orders of magnitude below the 10^{-4} to 10^{-6} risk bench-mark.

20. Remedial Action Goals

Soil Anacomp submitted an additional risk analysis for chemicals of potential concern in soil on December 29, 1993. The assessment indicated that the existing levels of contaminants in soil pose no threat to human health under the scenarios describing inhalation of contaminated air, incidental ingestion of soil and dermal contact with soil by future construction workers. Thus, additional cleanup is not deemed necessary.

Groundwater Cleanup goals for indicator chemicals in groundwater were developed using EPA-produced reference doses because no standards or criteria have been developed under the Safe Drinking Water Act and Clean Water Act for the chemicals of potential concern at the site. The cleanup goals were designed to ensure treatment of the contaminated groundwater that results in an acceptable excess risk of less than 10^{-6} and a hazard index of less than 1.0.

21. Remedial Actions In September 1989, the discharger submitted a report "Final Remedial Action Plan" (RAP) for the site. In this report, the discharger proposed cleanup goals for the contaminants of interest and recommended the interim remedial measures as a final remedy to meet the cleanup goals. To date, almost all the projected activities proposed in the RAP are completed. The interim remedial measures ceased in mid 1991. The only existing activity is monitoring of groundwater. For the last six quarters, monitoring results indicated that the concentration of total solvents at the site measured below the cleanup goals. TPH-diesel is the only pollutant detected above cleanup goals at the site (see Table 1 below).

Although the extraction treatment system was responsible in extracting most of the contaminants from groundwater, biodegradation also played a major role in this reduction mechanism. The biodegradation has been very effective at the site because the primary solvents have high solubility, high vapor pressure, and are readily biodegradable to simpler forms carbon dioxide and water. Based on the analytical data, solvents cleanup goals are achieved at the site. Therefore, no further remediation and/or monitoring is required for solvents.

Table 1
1992-1993 Groundwater Analytical Data at 5440 Facility
and Proposed Cleanup Goals (ppm)

Date	MEK	Acetone	IPA	Cyclo	DGDE	Freon 113	Diesel
03/92	<0.01	<0.02	<0.100	<0.100	<1.0	0.012	NA
06/92	<0.01	<0.02	<0.100	<0.100	<1.0	0.015	0.770
10/92	<0.01	<0.02	<0.100	<0.100	<1.0	0.012	0.740
12/92	<0.01	<0.02	<0.100	<0.100	<1.0	<0.005	0.860
03/93	<0.01	<0.02	<0.100	<0.100	NA	<0.005	0.710
05/93	<0.01	<0.02	<0.100	<0.100	NA	<0.005	1.200
Cleanup Goals	**1.8**	**3.5**	-	**1.5**	**4,900**	-	**1.0**

Notes: IPA = isopropanol DGDE = diglyme NA = non-analyzed
Cyclo = cyclohexanone

22. The only contaminant of concern detected above cleanup goal is TPH-diesel at 1.2 ppm in groundwater beneath the 5440 facility. This value is slightly above the proposed cleanup goal, but significantly above the detection limit which is 0.050 ppm. TPH-diesel is biodegradable but at a slower rate. The remediation system was not effective in reducing TPH-diesel concentration because the treatment system was designed primarily to treat volatile solvents, especially MEK. Based on (i) the very conservative cleanup goal for TPH-diesel, (ii) the poor water quality (i.e. high TDS and tidally influenced shallow groundwater), (iii) the site location in an industrial area, (iv) the relative immobility of the contaminant, and (v) the technical difficulty associated with remediation of TPH-diesel in groundwater, the current concentration of TPH-diesel does not threaten human health or the environment. No further action is needed to address TPH-diesel.

23. This action to rescind waste discharge requirements is exempt from the provisions of the California Environmental Quality Act (CEQA) pursuant to 14 CCR 15308 (actions by regulatory agencies for protection of the environment).

24. The Board has notified the discharger and interested agencies and persons of its intent to rescind Waste Discharge Requirements for the site, and has provided them with the opportunity for a public hearing and an opportunity to submit their written views and recommendations.

25. The Board in a public meeting heard and considered all comments pertaining to the rescission of Waste Discharge Requirements for the site.

IT IS HEREBY ORDERED, pursuant to Section 13304 of the California Water Code, that Order No.

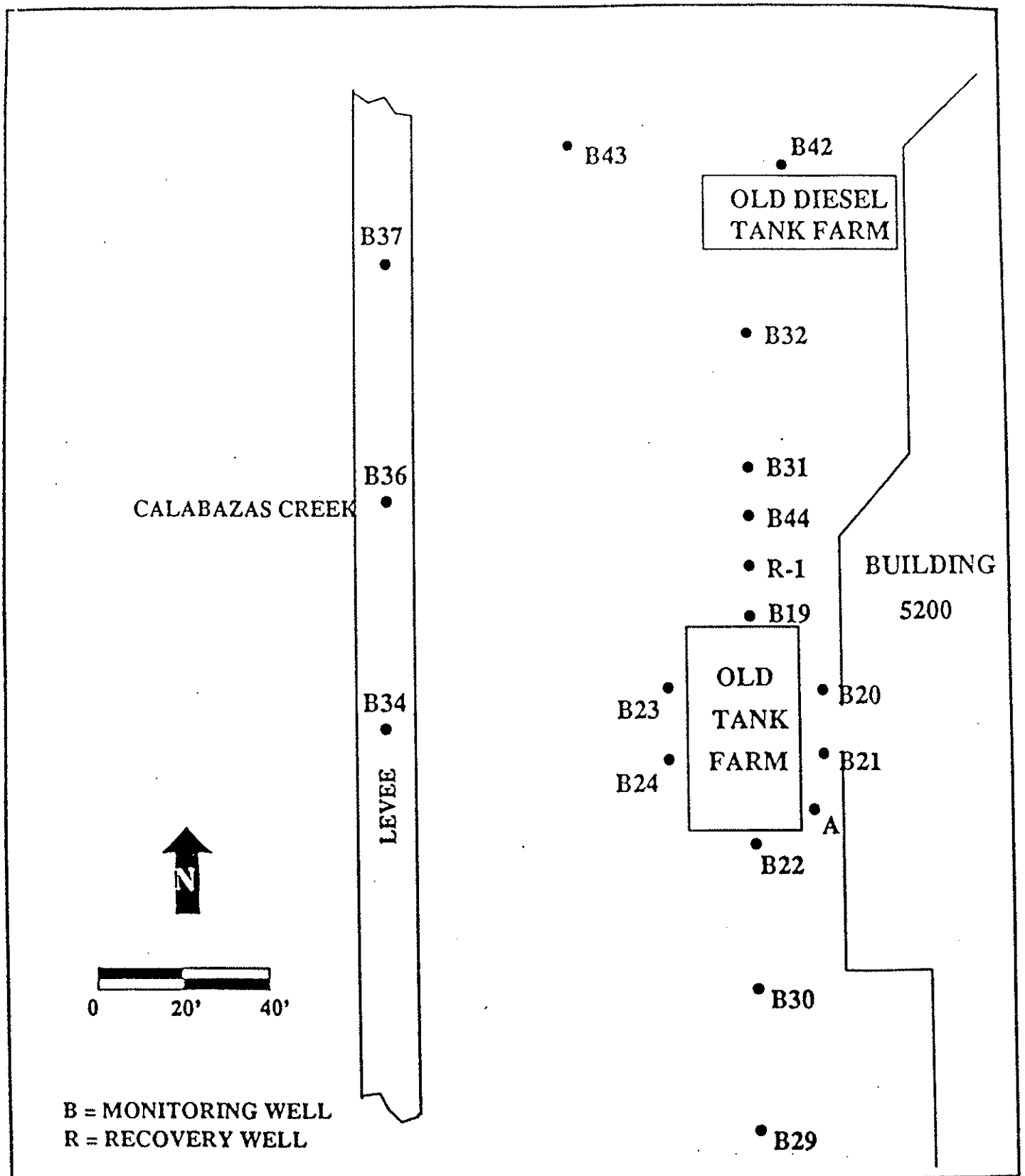
85-131 is rescinded.

IT IS FURTHER ORDERED, that the discharger is required to properly close all the existing extraction and monitoring wells at the site following methods and procedures consistent with the Santa Clara Valley Water District's protocol. The discharger is also required to dismantle and remove all remediation equipment and piping at the site within 120 days after this Order is adopted.

I, Steven R. Ritchie, Executive Officer, do hereby certify that the foregoing is a full, true and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region on January 19, 1994.

Lawrence P. Kolb
for
Steven R. Ritchie
Executive Officer

Attachments: Figure 1 - 5200 Tank Farm Locations
Figure 2 - 5440 Tank Farm Location



5200 Patrick Henry Drive

FIGURE 1

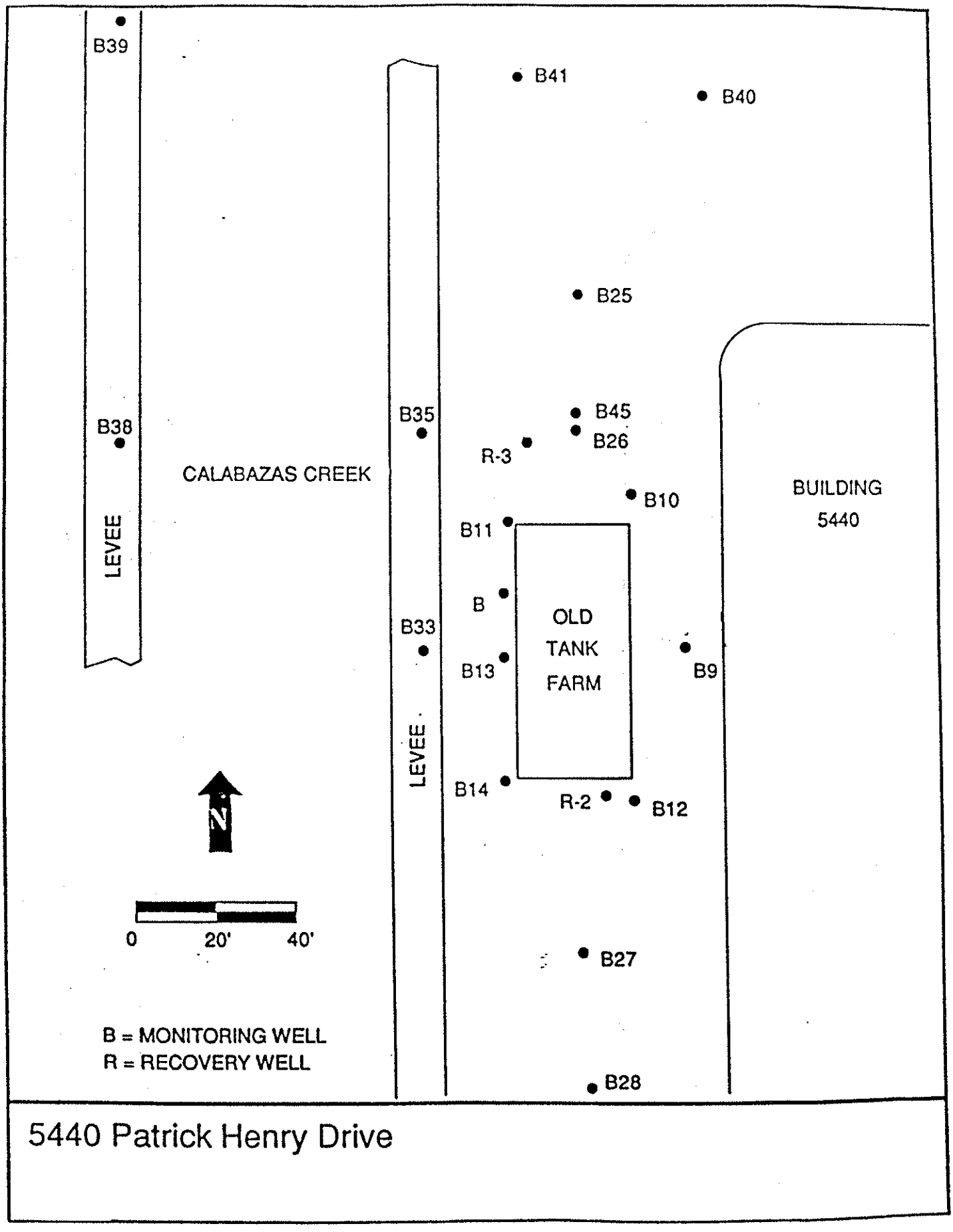

B39
B41
B40
B25
B38
B35
B45
B26
R-3
CALABAZAS CREEK
B10
BUILDING
5440
LEVEE
B11
B
OLD
TANK
FARM
B33
B13
B9
LEVEE
B14
R-2
B12
N
0
20'
40'
B27
B = MONITORING WELL
R = RECOVERY WELL
B28
5440 Patrick Henry Drive

FIGURE 2